

DVA concepts

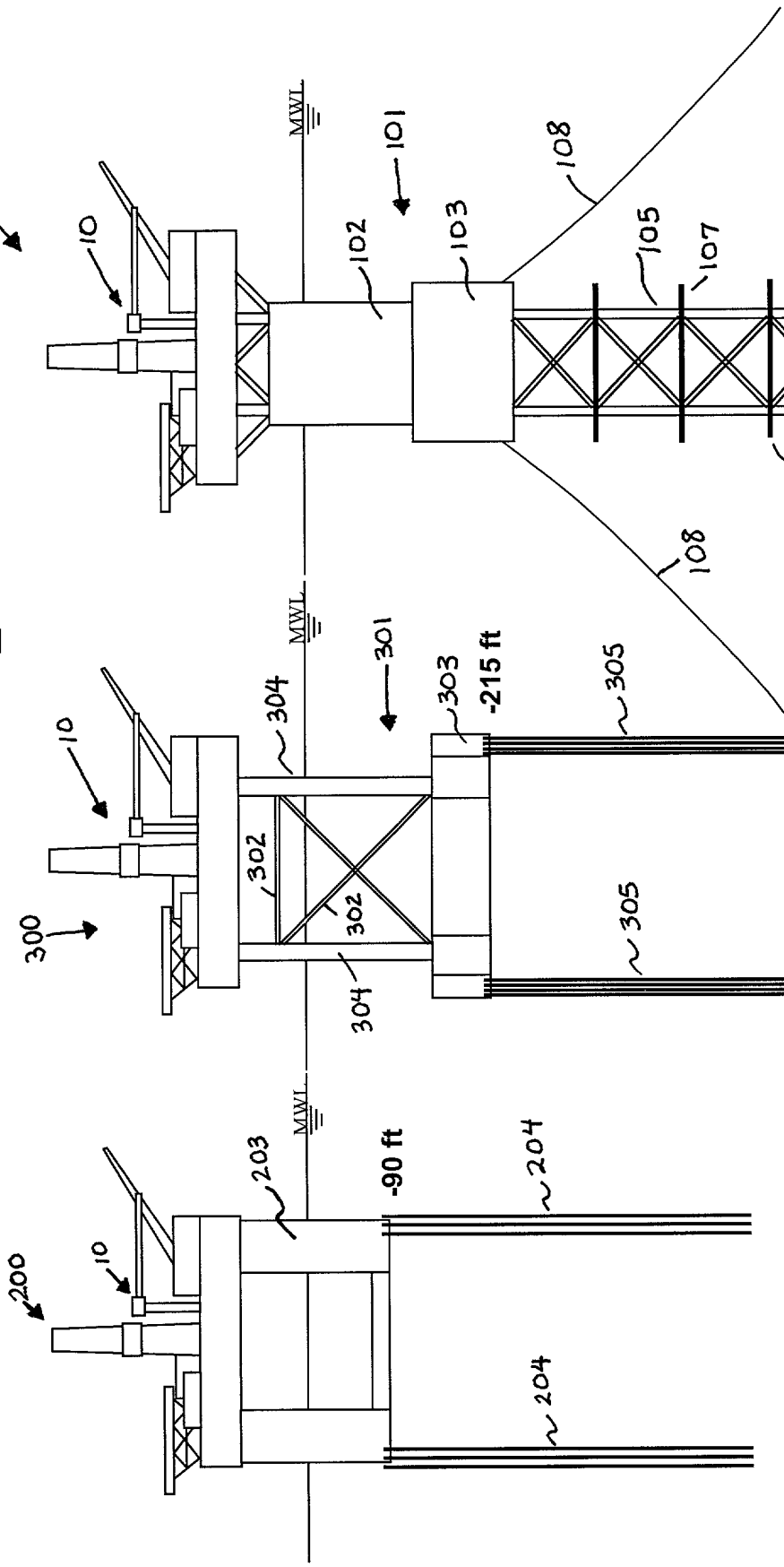


FIG. 1
(PRIOR ART)

Soft TLP
FIG. 2

FIG. 3
(PRIOR ART)

A “softer” TLP

- Natural heave and pitch period around 7 sec
- Minimize wave loads (heave force and pitch/roll moment) in 7 sec seas
- Draft is 215 ft
- Small columns (14 ft diam) minimize exposure in wave zone
- Narrow pontoons (30 ft wide by 70 ft high) reduce heave added-mass
- Extensions (65 ft long) increase pitch stiffness

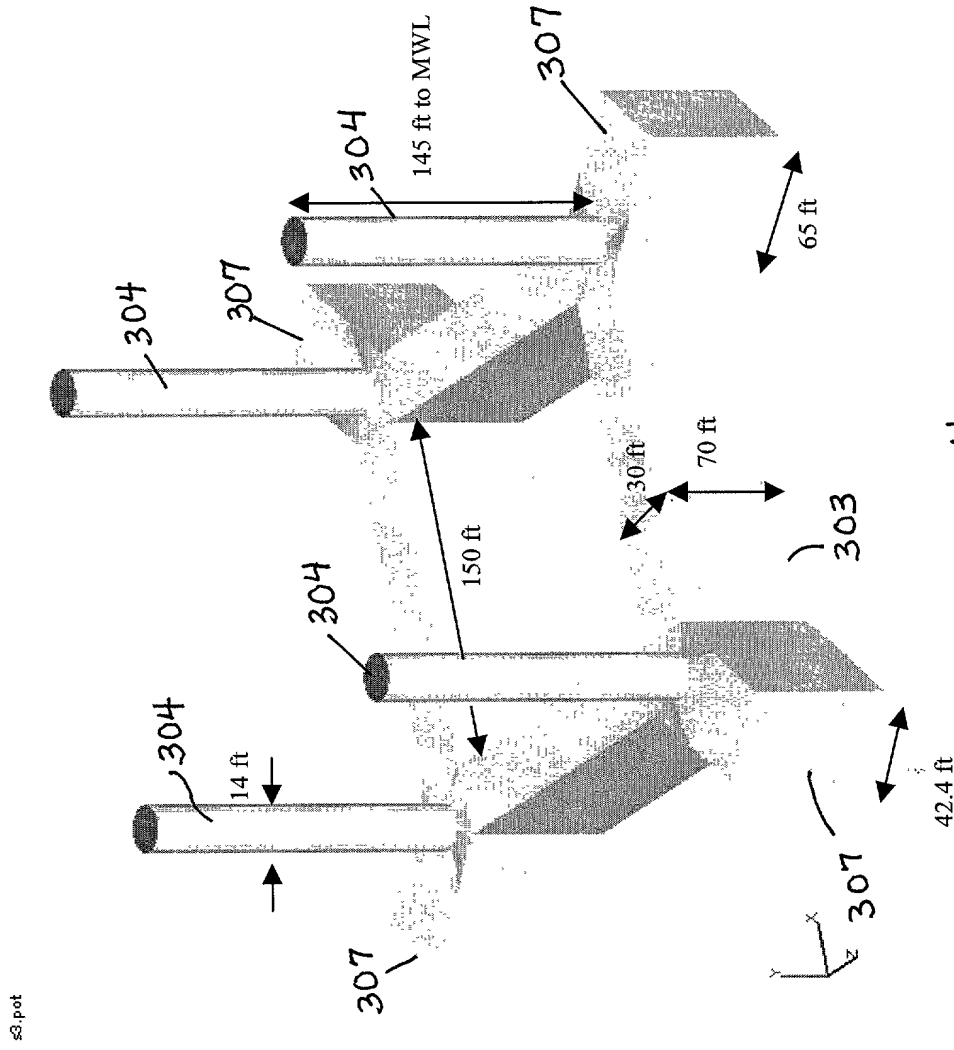
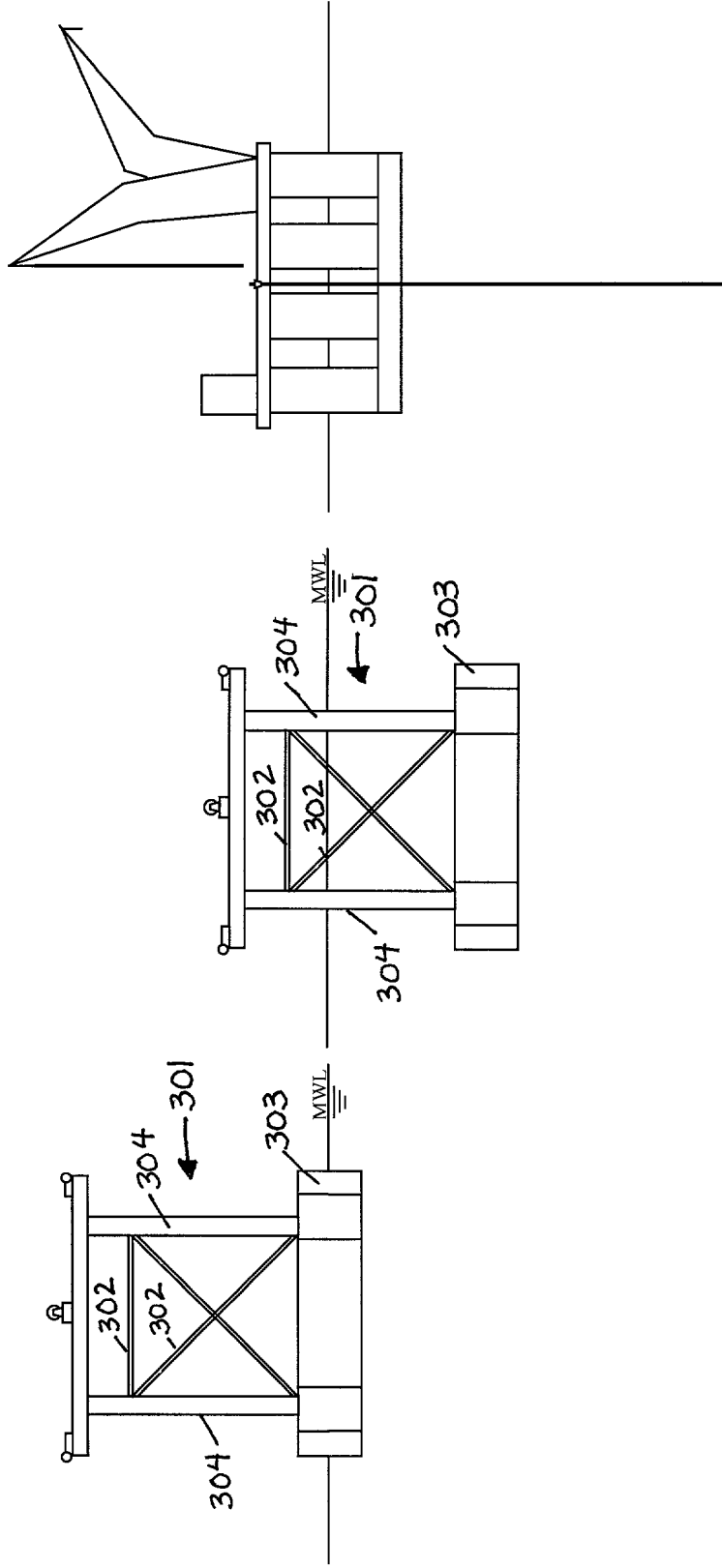


FIG. 4

Installation sequence 1/3



1. Hull towed to location

FIG. 5

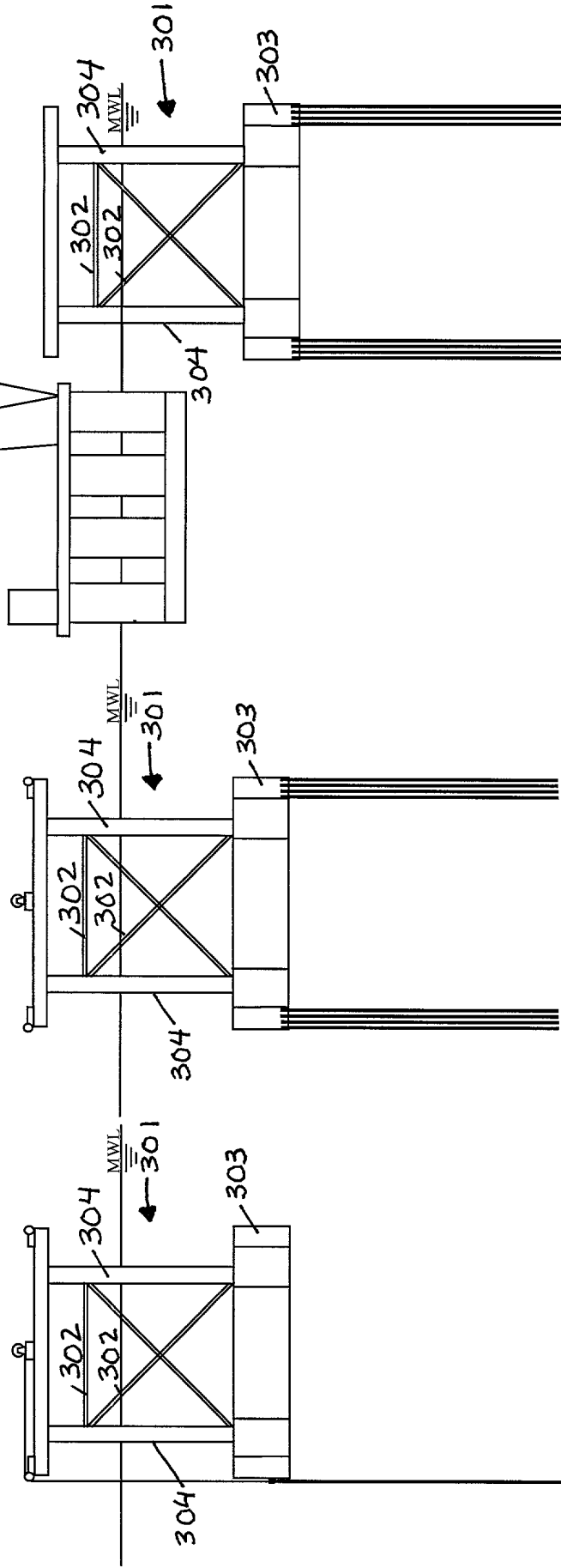
2. Hull ballasted to -220 ft

FIG. 6

3. Tendons assembled by construction vessel

FIG. 7

Installation sequence 2/3



4. Tendons passed to Soft TLP
by sets of 4 and pre-connected

FIG. 8

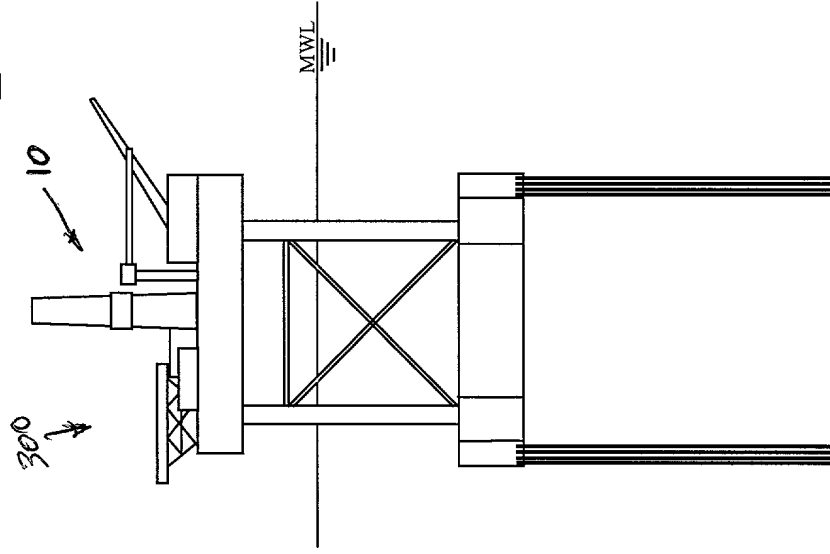
5. All tendons connected and
tensioned
- platform partly de-ballasted

FIG. 9

6. Deck assembled by modules

FIG. 10

Installation sequence 3/3



7. Deck complete and platform
fully de-ballasted

FIG. 11

Base case for study: carry Brutus TLP payload and functionality in 2,500 m

	short tons	Brutus	Soft TLP
Process module	4150		4150
Quarter module	3000		3000
Power module	2870		2870
Drilling module	4500		4500
Wellbay module	7700		7700
Export risers	300		750
Subsea risers	600		1500
Interconnects	270		270
Flare boom	150		150
Ballast	4000		4000
Total Payload	27540		28890



Dynamic analysis

- Diffraction-radiation (Wamit)
- Viscous load and drift forces (Perfic)
- Tendon response and global motion (Cosmos)
- Tendon fatigue (Cfpost)

DOF	Mean	Rms	Max	Min
Wave height (ft)	0.00	9.97	37.97	-37.97
Offset (ft)	223.9	16.3	276.5	171.3
Heave (ft)	-3.03	0.75	-0.25	-5.82
Pitch (deg)	-0.18	0.26	0.79	-1.15
Yaw (deg)	-7.34	0.77	-5.12	-9.53
Bot. Tens. (kips)	2087	428	4013	161
Top tens. (kips)	3040	371	4709	1370

FIG. 13

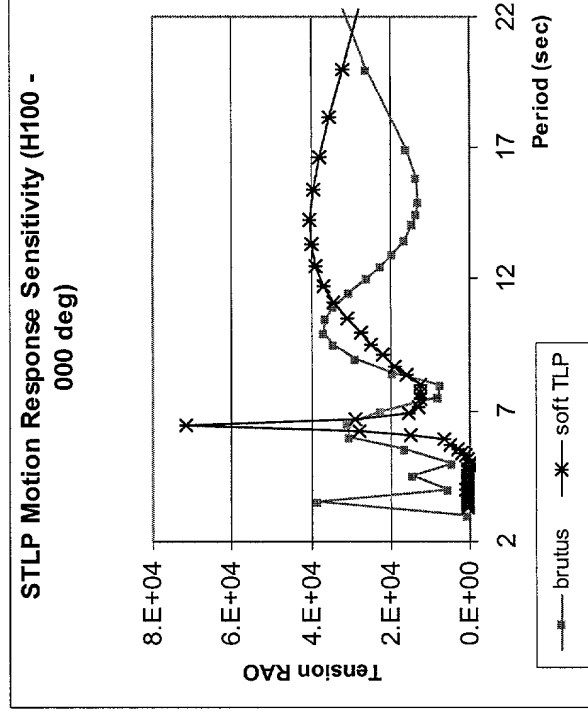


FIG. 14